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ABSTRACT

As part of the National Institute of Education's Teaching and Instruction Program, the Research on Instruction Team has developed a program focusing on research on Instructionally Effective Schools. Such a school is defined as having a high mean level of student achievement and no educationally significant differences between different racial, ethnic, and social-class groups of students. This document presents the factors that support this particular emphasis for the program, summarizes the state of knowledge, and outlines proposed research. The section on the current state of knowledge presents the argument that school effectiveness is determined by school-level, classroom-level, and student factors and by the interconnections among the three. The discussion first describes the current knowledge base regarding effective instructional practices at the classroom and school levels; then it critiques this knowledge base and, in the process, identifies issues for future research. Ten proposed research projects are briefly described. Relevant educational projects at research laboratories and centers are described and their contributions to the issues discussed are identified. (Author/MLF)

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INSTRUCTIONALLY EFFECTIVE SCHOOLS

Research Area Plan

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I. Major Problem

The most persistent problem facing American education today is the substantial gaps in mean academic performance between white and non-white students, and between middle/upper middle class and poor students. For example, on the most recent (1977-78) administration of the National Assessment of Education Progress in mathematics, at all age levels and across all dimensions of mathematical knowledge and skill: whites outperformed blacks and Hispanics; students whose parents had not completed high school were outperformed by students from more highly educated backgrounds; and students from big cities and from disadvantaged urban areas were outperformed by students in all other types and sizes of communities (NAEP, 1979). Similar between group differences are also found in performance in reading, science, social studies (NCES, 1978), and writing (NAEP, n.d.).

These differences have not come about recently, and have shown little sign of dissipating over time. Consequently, the size and longevity of these differences have been of major concern to policy makers, educators and researchers. The causes of these differences are undoubtedly multiple and complex, including possible differences in family and home environments, in individual motivation and ability, in opportunities created by a stratified social structure, and in differential schooling experiences. While there is disagreement over which are the most important causes for achievement differences, there is near universal agreement that it is primarily the responsibility of the educational system, and the school in particular to provide instruction which will ultimately alleviate and reduce these social class and racially/ethnically based gaps in achievement.

In the context of these issues, the Research on Instruction Team has developed a program focused on research on Instructionally Effective Schools. Several factors combine to support this particular emphasis for our program.

First, as part of the Institute's Teaching and Instruction Program, we are charged with the responsibility of conducting research which will contribute to the improvement of the effective delivery of instruction to individuals enrolled in American schools.

Second, the school, in contrast to the school district or the classroom, is the basic organizational and institutional unit responsible for providing instruction. Even within school districts, schools enjoy a fairly high degree of autonomy in organizing their instructional program. Families typically form attachments to, and develop concerns about, their neighborhood school, and the quality of a school is often an important factor in determining a family's choice of residence. A child's educational experiences are organized principally around the school, with curriculum and instruction organized and sequenced by grade level within schools, with additional instructional support provided by the school, and with a host of extracurricular and other noninstructional activities located in, and organized by, the school.

Third, important differences in student achievement occurring between schools even within school districts. This is expecially so when we compare schools with different socioeconomic, racial, and ethnic compositions. At the school level, there is a strong correlation between the proportion of poor and minority students, and the achievement scores of the school.

Considerable evidence [Edmonds (1979), Brookover et al, (1977), Weber (1971)] demonstrates however, that there are schools, serving disadvantaged populations in urban areas, which are unusually effective in raising the achievement levels of their students. The primary significance of this research lies in the strong suggestion that schools have the capability of reducing, to a considerable extent, the dependence of student performance on family background and other ascribed characteristics. These studies are only beginning to describe the manner in which these schools achieve their success.

Focus: The principal objective of this research area plan, then, is to extend knowledge of ways in which both elementary and secondary schools (lower status, minority, and urban schools in particular) can more effectively provide instruction. Ideally, we are concerned with effective instruction in all subject areas. Practically, however, we must confine our investigations to the effective delivery of instruction in the basic skills and postpone, for now, similar efforts in other content areas. This decision is based upon two considerations stemming from the notion that the basic skills are the building blocks upon which effective educational programs are built:

- Mastery of other content areas and academic skills relies in some manner upon the prior acquisition of the basic skills of reading, writing, and mathematics. As such, mastery of the basic skills is universally included among the primary goals of education and their effective delivery is considered a fundamental of sound educational programming.

- Our current ability to conceptualize and measure student performance is greatest in the basic skills. Other content areas, and higher level cognitive skills pose conceptual and psychometric difficulties not encountered with the basic skills. As other programs in Teaching and Learning (specifically, the Learning and Development Division) increase our ability to define and measure higher order cognitive skills and a variety of important social outcomes of education, the focus of our research effort will be expanded.

Definition of Instructionally Effective Schools: Two criteria, applied simultaneously, form a conceptual, working definition of instructionally effective schools (and classrooms). The first criterion is a high mean level of student achievement. Ideally, this would be defined on an absolute scale, reflecting the extent to which students performed at some desirable levels. (This contrasts with a relative or comparative definition of achievement, in which effectiveness would be defined as schools with performance levels which are higher than those of schools with similar student bodies).

The second criterion deals with the relationship between pupil background characteristics (e.g., socioeconomic status, race, ethnicity) and pupil performance. An effective school would be one which attenuates, or reduces, the relationship between background and performance. Ideally, in an effective school the correlation between individual background and performance would be zero. A more realistic standard, however, defines effective schools as those in which there are no educationally significant differences between different racial, ethnic and social class

groups of students, and/or one in which the individual level correlation between pupil background and performance is statistically and educationally significantly lower than it is in the general population.

Relationship to Practice Improvement: The research proposed will identify for practitioners effective strategies and practices for dealing with instructional and management problems they face. Proposed research will make available to teachers and other practitioners a sophisticated set of concepts, frameworks, and theories, which they could apply to their own teaching-learning environment to develop an understanding of the forces which shape and influence behavior and interactions in their own schools and classrooms. Such frameworks are important because schools and classrooms are highly complex, dynamic social systems whose features will influence the implementation and use of any instructional and management strategies we can identify. By assisting teachers and principals in developing the conceptual tools necessary for understanding their own unique environments, we can aid them in identifying, selecting, modifying, or creating practices which will be effective in their settings.

Toward these ends, our proposed research will combine an emphasis on fundamental, descriptive research aimed at developing and improving our understanding of the ways in which schools and classrooms currently operate, along with an emphasis on the identification and description of practices effective in dealing with instructionally related problems in inner city, minority, and low status schools. Basic research, grounded in the realities of daily life in schools and classrooms, will provide conceptual and theoretical frameworks which can inform future research as well as decisions made by practitioners. And, research identifying effective practice will provide needed and useful information to practitioners, and will contribute to the identification of issues for future research.

Third, the proposed research strategy involves practitioners. Practitioners have participated in planning activities, in reviewing proposals and ongoing projects, and in advising researchers in the field. A key feature of much proposed new research will be to encourage strongly the active collaboration by practitioners in the research activities themselves. Previous success with such collaborative research projects at the Far West Lab, the Institute for Research on Teaching, the Research and Development Center for Teacher Education, as well as in several other Teaching and Instruction funded projects, has suggested the value of routinely including practitioners as research collaborators.

Relationship to Educational Equity: The definition of effective schools includes the criterion that such schools will have

succeeded in reducing racial, ethnic, and social class differences in achievement. Proposed studies of such settings will be designed to produce information on educational practices which have been effective in enhancing equity. Second, proposed research will focus on inner city schools, on schools with large proportions of Black, Hispanic, and other minority groups, and on schools with especially heterogeneous student populations.

II. Current State of Knowledge

Preface

In this section, we present the argument that school effectiveness is determined by school level factors, by classroom level factors, by student factors, and by the interconnections among the three. Our discussion proceeds as follows.

First, we will describe our current knowledge base regarding effective instructional practices at the classroom and school levels. Second, we will critique this knowledge base, and in the process, identify issues for future research.

Effective Classroom Instruction: Recent syntheses of research on effective teaching practices strongly suggest that, for reading and math in the elementary grades, the direct instruction model leads to increased academic performance, particularly in classrooms with low socioeconomic status and minority students. As summarized by several people (Rosenshine, 1976; Rosenshine and Berliner, 1977; Medley, 1977 and Brophy, 1979), an effective classroom is one in which:

- The teacher keeps the students on academic tasks, and the content coverage is extensive;
- The teacher and workbook questions are highly structured, and elicit a relatively high rate of correct answers from students;
- The teachers and materials provide immediate, academically-oriented feedback, praising correct responses and exploring incorrect ones;
- Instruction is provided to the whole class or to small groups;
- Teachers monitor student performance during recitation sessions, and provide individualized feedback to students.

These features were found to be particularly important in heterogeneous classes in Title I schools in which there were large proportions of low SES and minority pupils (Brophy, 1975).

The direct instructional model has been tested, experimentally, in several studies (Anderson and Brophy, 1976; Good, Ebmeir and Beckerman, 1978; Stallings et al, 1978; Gage and Crawford, 1978; Gage and Coladarci, 1980). In these studies, teachers have attended workshops designed to provide information on the Direct Instructional Model. Changes in teachers' behaviors were monitored through observation, and changes in student learning in the experimental classrooms were compared with changes in control classrooms. In all cases except one (Gage and Coladarci, 1980), teachers changed and student learning was increased. Many of the experimental classrooms were also in Title I schools with a diversity of students, including large percentages of low SES and minority students. Gage and Coladarci's (1980) recent replication of his early experiment, however, took place in the homogeneous classrooms with primarily low SES and minority students.

Effective Schools: A second, less well developed research tradition has attempted to identify the characteristics of elementary schools which are particularly effective in basic skills instruction for minority and low socioeconomic status students (e.g., Weber, 1971; Brookover et al, 1977; Edmonds 1979). Research in this tradition has employed the strategy of identifying more and less effective schools, and then searching for consistent patterns of differences between them. Nearly all of the previous studies (with the notable exception of the Edmonds' Search for Effective Schools Project, to be discussed below) have relied upon regression techniques and a search for outliers above and below the regression line to identify more and less effective schools. That is, schools were matched on some "input" variable, such as student body composition, per pupil expenditures, or prior achievement levels, and were then compared on average achievement test scores. For any set of matched schools, those which had relatively high average student achievement levels were identified as unusually effective, while those which scored especially low were identified as unusually ineffective.

As reviewed by Edmonds (1979), these studies suggest that differences in effectiveness among schools can be accounted for by the following five factors:

- Strong administrative leadership by the school principal, especially in regard to instructional matters;
- A school climate conducive to learning; i.e., a safe and orderly school free of discipline and vandalism problems;
- School-wide emphasis on basic skills instruction, which entails agreement among the professional staff that instruction in the basic skills is the primary goal of the school;

- o Teacher expectations that students can reach high levels of achievement; and

- o A system for monitoring and assessing pupil performance which is tied to instructional objectives.

These factors seem quite sensible. They imply that a school in which the principal and instructional staff agree on what they're doing, believe they can do it, provide an environment conducive to accomplishing the task, and monitor their effectiveness and adjust performance based on such feedback, is likely to be an effective one. Confidence in these factors is strengthened further by the similarities between these school level factors and several features of direct instruction at the classroom level.

More specifically, both teacher effectiveness and effective schools research highlight the importance of commitment of basic skills as instructional goals. Both lines of research stress the need for an orderly, business-like environment which permits teacher and students to devote their time and energy to teaching and learning academic content. The need for mechanisms for systematically and frequently assessing student performance in the basic skills, which provides feedback to both teachers and pupils regarding their success, is identified in both sets of studies. And finally, the notion that successful instruction is, in part, a function of teachers' beliefs that such success is possible for themselves and their students, is supported by both lines of inquiry.

A Critique

This research usefully identifies a general set of principles which school staffs and other educators can use to guide instructional decisions. However, it suffers from several shortcomings which make it inadequate, by itself, as a knowledge base to improve instructional effectiveness for poor and minority students.

Definition of Effectiveness: By and large, in both the teacher effectiveness and effective schools research, the definition of effectiveness is limited to classroom (or school) average achievement or achievement gains. Still unexamined is the extent to which the factors contributing to effectiveness influence the distribution of student achievement within the unit being studied (classroom or school). This is important if one accepts the definition of instructional effectiveness which includes the criterion that the relationship between pupil background and achievement, within the school, approach zero. Research focusing exclusively on average achievement leaves open the strong possibility that while the overall level of achievement may increase, the influence of pupil background on achievement may persist as well. Only research which treats the variance in student achievement (and especially

the extent to which such variance covaries with racial, ethnic, and/or social status characteristics of individual pupils) as a topic for investigation will permit identification of alterable school and instructional factors which can reduce the correlation between pupil background and performance.

Second, most of this research uses a relative definition of effectiveness, in which schools or teachers are identified as effective if their (average) achievement level is higher than those with comparable school or classroom pupil composition. Since schools and classrooms composed of predominantly lower-class pupils typically have lower achievement levels than those with predominantly middle class students, the standard of effectiveness applied to these schools is typically lower than that for middle class schools. This definition of effectiveness could lead to accepting achievement differences between schools and classrooms with poor students versus those with middle class students. This relative definition of effectiveness in no way assures that effective schools, regardless of student body composition, are as effective in an absolute sense as we might reasonably expect them to be.

An alternative definition of effectiveness (Edmonds, in the Search for Effective Schools Project) uses both criterion referenced and norm referenced reading and math scores for individual students, at several grade levels and over several years. Students are grouped into one of five socioeconomic levels in each school, and average achievement scores are calculated for each socioeconomic level within each school. Thus, we can tell the average achievement level for any given school, as well as the achievement level of different status students with the school. Three categories of schools are identified. Those schools which have high achievement scores on the average, and in which there is little difference in achievement between the high and low status students, are labeled Generally Effective Schools. Those schools which have high achievement scores for the high status students, but much lower scores for low status students, are considered to be Discriminatorily Ineffective. Those schools in which achievement scores are generally low for both high and low status students are considered to be Generally Ineffective. This same procedure is repeated using different outcome measures (criterion referenced and norm referenced, for both reading and math), at different grade levels and for different school years, using both cross-sectional analyses and analyses based upon achievement growth rates for individual students. The final set of schools in each of the three categories is composed of those schools which consistently fall into the same category for each of the different analyses.

While this approach to identifying effective schools is consistent with the criteria adopted in this plan, it also yields a set of schools in which there is some covariation between effectiveness and

the socioeconomic composition of the student body. The possibility that differences in school effectiveness are largely a function of student body composition cannot be entirely discounted.

School Level Factors: This analysis suggests an additional weakness in effective schools research: its inability, thus far, to distinguish unambiguously between cause and effect. For example, this body of research has failed to consider the possibility that school characteristics associated with unusual effectiveness are products of the student body, rather than causes of high achievement. This distinction is clarified through the following reasoning.

First, assume that a prerequisite for high achievement levels in schools is an adequately socialized student body (students who are motivated and who have the capacity to productively engage in school learning tasks). Further, assume that at the elementary school level, those factors which produce an adequately socialized student body are primarily located in the family and the community, rather than the school. Further, assume that these factors are imperfectly measured by indicators of socioeconomic status.

There are at least four consequences of having a large proportion of adequately socialized students in a given school. First, high levels of student performance would be expected . Second, as a consequences of this, teachers should expect continued high performance by students. Third, because of relatively high levels of student motivation, there should be relatively low levels of discipline and vandalism problems, resulting in a safe and orderly school climate. Fourth, as a result of the above, the school should ran smoothly, with the principal and teacher having the opportunity to focus their energies and attention on instructional issues.

Thus, in this analysis, the characteristics of effective schools are consequences, rather than causes of effectiveness.

A somewhat different and more refined analysis would argue that characteristics of effective schools, such as leadership, agreement on instructional goals, and the presence of an assessment and evaluation system still are causally important, but only in schools which have an adequately socialized student body. That is, there is a conditional relationship in which factors, as characterized by Edmonds (1979), are important only if students are prepared to work in schools, but are not powerful enough to overcome the negative effects of students who are unmotivated and who do not receive adequate support and encouragement at home and in their communities. Similarly, schools with well prepared students may still turn out to be ineffective if they are not doing the things identified in Edmonds' work.

Another issue thus far ignored by the effective schools research is that it disregards much of what we believe to be true of schools as organizations. For example, the five factors suggested by Edmonds as contributing to school effectiveness suggest a model of schools which conforms fairly closely to the classical model of bureaucratic organization; i.e., goal oriented organizations with hierarchical authority structures, with central managers who monitor behavior and deliberately adjust organizational performance based on clear and agreed upon goals and feedback regarding goal attainment.

In contrast to this view of schools as bureaucratic organizations is one which emphasizes the nature of schools as loosely coupled organizations. Such a view emphasizes the weak connections between principals and teachers and among teachers, and highlights the multiple forces, other than hierarchical authority, which influence the behavior of teachers. Agreement on instructional goals in schools is seen as rare and problematic, and there are strong limitations on the opportunities and resources available to principals to exert leadership and to manage and influence teacher behavior and beliefs.

Similarly, in contrast to the view of the principal as a strong instructional leader is the ethnographic study of an elementary school principal by Walcott (1973), and Lortie's ongoing interviews with elementary and secondary principals. Both portray images of principals responding to a multitude of complex forces, many of which have little to do with classroom instruction. Principals, who view their ideal role as that of an instructional leader, in fact seem to spend more of their time managing potential conflict. Principals run far greater risks of displeasing central office staff by having visible conflicts among staff or with the community (or other managerial problems) than they do if low test scores become visible.

Descriptions of effective schools differ considerably, then, from what is believed about schools in general. Perhaps unusually effective schools <u>are</u> different from most schools, and what accounts for their effectiveness is precisely the fact that they are more tightly managed and more collectively committed to basic skills instruction. This seems sensible on its face, though we would be more confident of this interpretation if we knew more about <u>how</u> principals exercise leadership in the face of: competing goals and pressures; norms which support teacher autonomy in the classroom and which typically limit the amount of information available to principals regarding actual instructional practices; variations in teachers' goals and instructional styles; and communities which may be passive, hostile, or simply varied in their preferences for what the school does. Confidence in Edmonds' five factors would be increased if we understood how they came about and operated in schools.

Future research, then, needs to examine the nature of instructional leadership and the conditions influencing the principal's ability to exert leadership, and factors influencing the formation and consequences of shared instructional goals. Additionally, such research needs to shed light on the extent and ways in which school level factors and decisions may shape and influence teacher and student behaviors in the classroom. While schools may be loosely coupled in the sense that policies at one level of the hierarchy only weakly influence behaviors at lower levels, connections between levels do, in fact, exist, and they are neither weak nor trivial. For example, the composition of the classroom is largely determined by decisions at the school level regarding the assignment of pupils to teachers and classes. And classroom composition may influence classroom instruction by shaping and constraining the number, size and make-up of instructional groups in the classroom. (See Dreeben, 1979)

Classroom Instruction: The Direct Instructional Model provides teachers with a description of an optimal classroom condition, a way of thinking about what goes on in the classroom, and a criterion against which to measure the effects of experimenting with different structures and approaches. (See, for example, an article by Raquel Muir (1979), a teacher who has documented her experimentation with the direct instruction model.)

The model does not, however, provide much guidance to teachers on how to implement direct instruction. Decisions on the nature of instructional activities, the nature, size and composition of instructional groups, strategies for motivating and rewarding student behavior, and coping with considerable diversity of student ability and prior performance within the classroom must be made. Systematic knowledge to guide these decisions is lacking. Strategies for dealing with these problems are likely to vary from subject matter to subject matter, from class to class, from year to year, and across times within a given year (Muir, 1979; Dreeben, 1977). Additionally, Gage and Coladarci (1980) have shown that some classroom situations may be more intractable than others for implementing and experimenting with direct instruction.

A related problem with the use of direct instruction is that its successful implementation varies with problems of motivation, control, and classroom heterogeneity that face the teacher. Classrooms often contain students who may be unmotivated or motivated, disruptive or cooperative, attentive or distracting, relatively slow learners or relatively fast learners. More likely, classrooms often include some of each type of student, creating enormous management problems for the teacher. These problems are particularly acute in inner city schools with large

concentrations of poor and minority students. And it was with a population of this type that teachers experienced difficulty in successfully implementing and using direct instruction (Gage and Coladarci, 1980).

A third problem is that this research has focused almost entirely on instruction in relatively low level reading and mathematics skills in the elementary grades. Unexamined thus far is instructional in higher level cognitive skills (e.g., comprehension, mathematical reasoning) at the elementary level, instruction in writing at the lementary and secondary levels, and instruction in reading and mathematics at the secondary level. Future research, then, needs to identify effective instructional practices at higher grade levels, for more complex skills, and in writing, as well as reading and mathematics.

Taken together, these problems highlight the importance of recognizing the fact that classrooms are collective settings composed of individual students who may vary considerably in their interests, motivations, goals, temperaments, abilities and prior achievements. Second, it forces researchers to reckon with the fact (as teachers, of necessity, already do) that student attendance is compulsory and, therefore, student engagement in the formally prescribed activities of the school is problematic, rather than taken for granted. These issues draw research attention to those classroom structures, processes, and systems which are used to sort and group students for instructional purposes; to evaluate, motivate, and reward student performance; to control, constrain and direct student behavior; and to the nature of the instructional tasks themselves. In short, additional research needs to focus on the social organization of classrooms. Further, research needs to further our understanding of the ways in teachers which make decisions regarding elements of classroom organization and management. Particularly important is understanding the basis upon which teachers select and organize instructional activities, make judgments regarding the performance of their students, and identify and work to correct student learning, motivation and discipline problems. More specifically, research needs to focus on:

- Peer Groups and Reward Structures: Coleman et al (1966), supported by a large body of sociological research (see Cohen, 1975 and Hallinan, 1977 for reviews of this work) found that the school socioeconomic composition powerfully influences student achievement. The student body in general, and friendship groups in particular, seem to serve as reference groups for students, providing role models, standards of comparison, and expectation systems which influence the academic behavior and achievement of individual students. Additional work (Alexander and Eckland 1973; Davis 1966; Meyer 1970; Nelson 1972) suggests that the ability composition of the school in interaction

with the nature of formal grading, reward and evaluation systems also powerfully influences student motivation, behavior and achievement. Taken together, research on formal and informal reward and expectation systems, peer groups, and social influence in schools is likely to pay off in terms of increased knowledge of the ways in which classroom and school factors influence achievement. Experimental work, leading to the development of a variety of team learning structures (DeVries and Slavin, 1976) has already provided evidence of the practical payoff of attending to these issues.

- Organization and Allocation of Time: Wiley (1973), Wiley and Harnischfeger (1974), Thomas (1977), Karweit (1976), Holley and Ligon (n.d.) and others point to teacher and student time as a resource which can vary considerably in the amount available and actually used for instructional purposes, as well as the way time is organized, allocated and differentially available to students within schools and classrooms. Much research has focused on the relationship between some version of amount of time (such as time-on-task) and student achievement, demonstrating that, in general, the more time spent on learning activities, the more learning occurs (Carroll, 1963; Bloom, 1979).

  While this research has been most useful in directing attention to an alterable school resource, more complex questions around the organization and allocation of time in classrooms need to be addressed. The collective character of the classroom suggests the importance of the pacing of instruction, and of the distribution of time to individual students in the class (Barr & Dreeben, 1977; Thomas, 1977; Karweit, 1978). Particularly in whole class, group instruction, the fact that there will be a range of ability and prior learning on the part of students suggest that the rate at which the teacher introduces and covers new material will affect both the level and distribution of achievement in the classroom. With instruction proceeding at a uniform rate for all students, some invariably will spend time simply waiting for other students to catch up, while others will fall further behind the class (Karweit, 1978). Teachers seem to use roughly the lower tenth to twentyfifth percentile of achievement as a "steering group" which determines when new material will be introduced (Dahloff, 1971). We don't know, however, how teachers select the steering group, or what the consequences of selecting different points on the achievement distribution would be.

Further, some of Bossert's work on activity structures suggests that a multitask structure, or some form of within class grouping practices, permit a more flexible use of time which can be tailored to the needs of individual students. The desirability of a flexible use of time for basic skills instruction is quite consistent with much of the work done on mastery learning by Carroll (1963), Bloom (1968), Block (1971, 1974) and others. It should be clear, however, that in order to use time flexibly in the classroom requires new organizational arrangements, the nature and consequences of which are just now becoming topics for the attention of researchers.

- Instructional Decision-Making: Muir (1979) has indicated that attempts to implement direct instruction in classrooms necesitates difficult decisions regarding the grouping of students for instruction, the selection of instructional materials and activities, the pacing of instruction, and the current levels of student performance. Recent work by Peterson and Clark (Peterson, Marx and Clark, 1978; Peterson and Clark, 1978) suggests that decisions on these kinds of instructional issues are either largely determined by teacher planning prior to instruction (in contrast to being responsive to cues from students during instruction), or are frequently not explicitly considered prior to or during instruction. It is likely, then, that important instructional management decisions reflect intuitive judgments by teachers. The basis of these judgments remain unclear. To the extent that new instructional strategies require explicit attention to instructional management, research designed to improve our understanding of the basis of teacher decisions, and improve teachers' ability to make decisions, is needed.

Summary

What emerges from the preceeding critique and analysis are three types of issues requiring additional research.

First, additional methodological work is needed to more adequately operationalize the proposed criteria for effectiveness. Such work needs to develop alternative approaches for identifying instructionally effective schools which avoid, insofar as possible, the identification of effective schools which also have relatively high proportions of middle and upper-middle class students.

Second, research has tentatively identified school level factors which contribute to instructional effectiveness. Additional research is needed to unambiguously determine whether these factors

are causes, or consequences, of school effectiveness. Research also needs to sort out the apparant contradictions between current findings and beliefs about how schools typically operate.

Third, research at the classroom level has identified effective instructional practices for elementary reading and mathematics. Additional research is needed to provide guidance to teachers on how to implement and use such strategies in heterogeneous and predominately minority classrooms. In order to be useful, such research needs to consider the interrelationships among instructional grouping practices, peer groups, classroom reward structures, and the organization and allocation of classroom time. Further, such research needs to expand current knowledge of ways in which teachers can more effectively make decisions regarding the management of classroom instruction. Finally, current knowledge needs to be expanded, to include the identification of effective instructional practices at the secondary level as well as the elementary level, and in writing as well as in reading and mathematics.

III. Proposed Research

The purpose of this section is to identify specific research activities which contribute to our mission of improving the effectiveness of elementary and secondary schools in the instruction of reading, writing and mathematics. Before identifying and describing these projects, we will briefly discuss the considerations which entered into the forumlation and choice of the projects. Our choice of projects is influenced by our previous discussion of the strengths and weaknesses of our current knowledge base. This discussion has suggested that the knowledge base is strongest regarding the identification of effective practices for reading and mathematics instruction at the elementary level and far weaker regarding reading and math instruction at the secondary level, and writing instruction at both levels. Therefore, at the elementary level, future research will fill in our knowledge gaps by emphasizing the identification of effective practices in writing instruction, and additional research on social organization of classrooms, on instructional decision-making, and on school level factors influencing instruction in each of the content areas.

At the secondary level, our knowledge base is relatively weak and undeveloped in all subject areas. Therefore, we will attempt to advance our knowledge base on all fronts. In doing this, we are mindful of the necessity of focusing our concerns for effective secondary schools only on the instruction of the basic skills. This limitation represents the most sensible expansion of this program's efforts from the elementary level. We are aware that definitions of effectiveness for secondary schools are often more broad and diffuse than simply basic skills instruction. This is because of the much broader range of course offerings at the secondary level,

and the strong concern over a variety of noninstructional outcomes at that level, including dropout rates, successful entry into labor markets, higher education and the military. However, the substantive strength of this program lies in understanding instructional issues, the most important of which remain in the basic skills area. Additionally, several other programs in NIE (the Youth Policy Team and the Program on Educational Organizations and Local Communities) are developing research programs which are concerned with more broad ranging definitions of effectiveness in junior and senior high schools. Therefore, limiting our attention at the secondary level to basic skills instruction enables us to avoid unnecessary duplication of other NIE program activities.

Initially, our research on certain school level factors will be concentrated at the elementary rather than the secondary level. This is because elementary schools are, organizationally, less complex and differentiated than secondary schools. The theoretical and practical problems of conducting research are, correspondingly, less complex at the elementary level. As we explore new research issues at the school level, we feel that the most sensible strategy is to start with the simple issues, and subsequently move to the more complex ones. Therefore, several of the research activities proposed below which address primarily school level factors will study elementary, rather than secondary schools.

Procurement Strategies: At this time, we are considering several alternative procurement strategies for the proposed work. One strategy would be to include most of the proposed activities in a broadly defined research grants competition. Another strategy under consideration would involve retaining a more focused grants announcement, coupled with a multiple award RFP for much of the remaining work. Yet a third strategy would involve retaining the focused grants announcement, and issuing separate RFP's for each of the proposed projects. Each of the above alternatives would involve separate RFP's for certain projects (the methodology project and the student mobility project) which we believe are distinctive enough, and can be specified enough, to warrant separate procurements.

Selecting among these strategies involve considerations of work load and staff capabilities; of T&L-wide decisions pertaining to grants policies; and of substantive issues which will arise during the course of additional planning for each research activity. Since we lack the necessary time and information to make these decisions now, what we present in this section is a listing and description of each proposed project, as though each would be procured separately. Those projects receiving approval and funding may be combined at a later date.

- Proposed Research Projects:

1) Methodologies for Identifying Instructionally Effective Schools (RFP, FY'81): Using the two criteria presented in this plan as a conceptual definition, we will fund a project to develop appropriate methodologies for operationalizing the criteria in order to identify instructionally effective schools. Previous work in this area suggests that a major difficulty to be overcome will be the development of techniques which are both responsive to our criteria and which identify schools which are consistently effective over a period of years. This project will involve researchers working in collaboration with staff from LEA and/or SEA Research and Evaluation staffs. Though this project is not currently in our budget for FY'81, we will request additional resources for it. This is because the successful development of methodologies for identifying instructionally effective schools is a critical first step before much of our other research can be conducted.

2) School Strategies for Coping with Student Mobility (RFP,FY'82):

One particularly acute problem facing inner city schools, resulting from the nature of their pupil composition, is that they often experience high rates of pupil turnover. That is, many students enrolled in a school in the Fall will have left by the following Spring and, many students enrolled at the end of the academic year were not enrolled in the same school during the previous Fall. This presents a problem for the mobile students as they attempt to adjust to new settings. It also presents serious instructional management problems for teachers and schools as they pick up and lose students over the course of the year. We will fund a study which will identify schools which are particularly effective in coping with the myriad problems associated with the assessment of student performance levels, diagnosis of student learning difficulties, assignment of new students to classes, and the successful integration of new students into ongoing instructional programs. The project will describe the strategies used by these effective schools. Planning for this effort will occur during FY'81, and both the planning effort and the research project itself will involve teachers and principals working in collaboration with researchers.

3) Strategies for Instructional Leadership (RFP, FY'82): This research project will explore ways in which elementary school principals can improve classroom instruction. Attention will be focused on effective leadership strategies, on effective practices for encouraging staff cooperation and agreement on instructional goals, and on the conditions which influence the use of such strategies. Planning for this effort will occur during FY'81, and both the planning effort and the research project itself will involve principals and teachers in collaboration with researchers.

The research will be conducted in inner city schools. We are currently considering conducting this work jointly with EPO's School Organization and Management Team. A decision on this proposed collaboration will be made after additional planning and discussions are held.

4) Classroom and School Organization (Grants Program, FY'81, 82):

The social organization of schools and classrooms will continue to be the focus of our grants announcement. We will, most likely, continue to highlight the four themes of instructional grouping and tracking practices, the formation and influence of peer groups, the organization of classroom activities, and the coordination and management of instruction, each considered with respect to problems of student motivation and student body composition, and with regard to effects on student learning. Research will focus on instruction in reading, writing, and mathematics. The announcement will be rewritten to take into account this program's new emphasis on instructionally effective schools, as well as the nature of projects funded in FY'80 and FY'81. Further, this announcement will provide funding for projects at both the elementary and secondary levels.

5) Institute for Research on Teaching (RFP, FY'81): The IRT will be competed in FY'81. While intensive planning for this procurement is just beginning now, we anticipate that an IRT will continue to focus its efforts on research on instructional decision-making. It is expected that future work will concentrate on instruction in mathematics and writing. Research will focus on judgments teachers make about the performance of minority and teachers' decisions about instruction, and on ways of improving practice with the knowledge already developed by IRT about reading decisions. The work will still be conducted at a Center, rather than as separate, small procurements, for three reasons: the need for an interdisciplinary mix of researchers and practitioners working on the same project, the need for individual projects to be in constant communication with each other in order to build a useful body of knowledge, and the need for a structure which will facilitate the preceeding two and the communication with other practitioners and researchers. Work at an Institute for Research on Teaching will be conducted at both the elementary and secondary levels.

6) Instructionally Effective Schools (RFP, FY'82): By FY'82, we will have: 1) appropriate methodologies for identifying effective schools; 2) the beginning of an accumulation of research on instructional management and organization practices; 3) findings from some ongoing research on principals; and 4) an integration and critique of findings from current effective schools research. This knowledge base should be sufficient for a major longitudinal study, over a three year period, to identify characteristics and

long-term processes in schools which contribute to maintenance or improvement in school effectiveness. This study should provide rich and detailed information regarding the conditions necessary for creating, implementing, and sustaining over time, those practices which contribute to improving school effectiveness.

7) Collaborative Research Program: This program is intended to address the full range of issues encompassed by both the Instructionally Effective Schools and Staff Development Research Areas. The purpose of the program is to attempt to create conditions which will bring about collaborative research efforts between researchers and practitioners. It is difficult to predict at this time what the precise nature of these proposed research projects will be, though past experience suggests that important concerns are classroom management and discipline, modes of grouping for instructional purposes, mechanisms and strategies for increasing time-on-task, and ways of facilitating cooperation among students and teachers. We anticipate a number of research projects to be funded through this program, through a multiple award RFP. These projects are likely to be of two types. Some will address well developed issues in which the day to day knowledge and perspective of the practitioner will be particularly useful in filling gaps in our knowledge base or in helping to resolve conflicting and divergent findings. Other projects will likely be in relatively unexplored areas which sould otherwise escape the attention of the research community. Working out more precise details of this program will be accomplished during the remainder of FY'80.

8) Writing Instruction (RFP's, FY'82): In FY'81, a study of effective writing instruction in both early and late elementary grades in urban schools will be conducted. Building upon several writing instruction projects currently underway, this study will examine the relationship between several different methods of instruction and the demands which these make on teachers' knowledge decision processes, and organizational structures.

In FY'80, a study of effective writing instruction in inner-city secondary schools will be aimed at developing empirical information about the procedures, methods and conditions which affect instructional effectiveness in the secondary grades. A particular focus will be the problems effective teachers handle in writing instruction, the knowledge they bring to bear on these problems, the strategies they use in response, and the extent to which they can evaluate the effects of their teaching behavior. In FY'82, a study of effective writing instruction at the secondary level will examine the relationship between dominant theories of instruction and the conditions under which the instruction is or is not effective. Of special importance will be the different demands which particular kinds of instruction make on the teachers' knowledge and problem-solving capacities. Also of special

interest will be the potential uses of research findings which might inform particular instructional situations.

9) Mathematics Instruction (RFP, in FY'82): Building on Good's ongoing work on direct instruction math at grade 7, and Lanier's study of instruction in grade 9 General Mathematics, we will continue to identify effective instruction practices in secondary mathematics. Planning, to be conducted during FY'81, will address issues of specific mathematics content and grade level to focus on. Both planning and research will involve practitioners working collaboratively.

10) Reading Instruction (RFP, FY'82): Building on the work of Stallings (1979), at the secondary level, we will continue to explore effective instructional practices. Work will focus on identifying effective practices in remedial instruction which may occur either in regular classrooms or in special instructional programs. Planning for this work will occur during FY'81, and the planning, as well as the research which will follow, will involve teachers working in collaboration with researchers. Among the issues to be considered during the planning phase will include the identification of the most appropriate grade levels to focus future work on.

V. Current Lab and Center Work

Lab and Center work in this area, including the Institute for Research on Teaching, is generally among the most promising research being conducted. Much of our past knowledge base in this area has been developed through Lab and Center work, and current work conducted at Labs and Centers funded by this program either is, or draws upon, the most advanced research. Taken together, the Lab and Center projects described below addresses many of the research issues in this plan.

Lab and Center staff have been included in our planning effort. Principal Investigators from each Lab and Center funded by the Teaching and Instruction Program met in Washington in mid February to respond to an earlier draft of this plan. Their comments were helping in improving the plan, and the meeting provided a strong basis for sharing information across Lab/Center projects, as well as for enlisting specific Lab/Center programs to support the proposed planning and research on Instructionally Effective Schools. We will continue to meet periodically with staff from our Lab/Center projects in order to encourage their work to contribute to our continued planning. We will describe below relevant Lab and Center Projects, and indicate their contribution to the issues identified in this plan.

1) School Organization Program, Center for Social Organization of Schools. Three major projects in this program are concerned with identifying and evaluating effective practices. The first, a project on Classroom Organization and Effectiveness, involves the evaluation of the relative effectiveness of several alternative approaches to direct instruction. These approaches include a mastery learning strategy, a team learning strategy, a combination of the two strategies, and a more traditionally oriented whole class direct instruction approach. The study is being conducted in ninth grade classes in urban junior high schools. A second project continues a line of research aimed at identifying the effects of school and family authority structures, and interactions between them, on the motivation and learning of secondary school students. A third project involves the identification of the range and variety of existing teacher and school practices for involving parents in the school related learning of their children. There is the possibility that continued research will focus on studying the implementation and effectiveness of such practices.

Several other projects in this program collectively are designed to improve our understanding of ways in which the social organization of schools and classrooms influence the formation of peer groups, their structure and norms, and their effects on student motivation and behavior. One project, conducted as part of the research on alternative strategies for direct instruction, examines the relationship between classroom task structure and the nature and distribution of student friendship choices. Other projects, at the high school level, examine the role that curriculum tracking practices, and the extracurriculum, play in determining student friendship choices, the formation and structure on peer groups, and peer influence processes.

2) Classroom Organization and Effective Teaching Project, Research and Development Center on Teacher Education. This project involves the continued analysis of several data sets at both the elementary and junior high school levels, especially in reading and math instruction. The research involves efforts to identify effective teacher management and classroom organization practices. Depending upon the data set being employed, the research investigates such issues as effective practices for teachers' management of time, materials, contacts with students, and constraints. Other analyses include such issues as the identification of management practices most effective with different types of students (e.g., rebellious or withdrawn students); practices which influence the nature and level of student participation in classrooms; and the identification of effective management practices in the beginning of the school year, as classes are just beginning.

3) Teaching Strategy as a Resource Allocation Process, M-L Group, CEMREL. This project, relying on the analysis of several existing data sets from elementary school classrooms, focuses on the effects

of different patterns of using teacher aides and instructional grouping practices on instructional time and student achievement.

4) Ecological Perspectives for Successful Schooling Practices, Far West Lab. This is a collaborative research activity, relying heavily on the participation of the teachers and principal in a school in the formulation of research issues and in the interpretation of data. The project focuses initially on an elementary school and subsequently will shift to an urban junior high school. The research involves the identification, description, and ultimately an attempt to restructure, elements of the social organization of schools and classrooms which contribute to schooling success. These elements include the organization and structuring of instructional activities, the nature of student participation in classroom activities, the interpretations and understandings of students regarding their role in the classroom, and the interrelationship among the three. The emphasis of this project is on the development of empirically grounded theory and concepts related to the organization of instruction in terms which can be used by practitioners.

5) Social Cognition and the Process of Schooling, Learning, Research and Development Center. This program is organized around four projects whose collective goal is improved understanding of the influence of the social context of schools and classrooms on students' perceptions and understandings of schooling, of their own roles as students, and on their motivation and learning as well. One project, on motivation and attribution processes in the classroom, relies on attribution theory and related social psychological theory to examine students perceptions of schooling and factors which influence their motivation and learning. A second project examines the types of social comparisons pupils make in classrooms, and the causes and consequences of such comparisons. A third project examines children's conceptions of their social roles in classrooms, and how these roles are shaped by the social context of classrooms. A fourth project is aimed at describing and explaining the relationship between children's school achievement and their development within their own families.

6) Institute for Research on Teaching, Michigan State University. The purpose of the IRT is to conduct research on the relationships between teacher thought and action, and to serve as an "intellectual forum" for the research-on-teaching community of researchers and practitioners. The IRT focuses on the decisions that teachers make about the management of instruction and content, particularly in elementary school reading instruction. Therefore, they investigate such areas as the conceptions that teachers have about reading and the teaching of reading, the degree to which external forces, such as competency exams, influence the decisions teachers make about content, and the ways in which expert diagnosticians

assess reading problems. This latter project is designed to provide teachers with ways of diagnosing reading problems in their own classrooms.

VI. Planning Activities

This current research area plan represents the continuing integration of what had previously been two relatively distinct areas of research: teacher effects research (formerly housed in the Teaching Division), and school effects research (formerly housed in the Productivity Division). As such, the roots for the planning of this work go back to earlier planning conferences on Research on Teaching, and to NIE's National Invitational Conference on School Organization and Effects. More recently, planning for this area has included small working sessions with researchers, teachers, principals, and school district personnel, held in conjunction with two ongoing projects directly related to this research area plan. One such meeting was held early this Fall, in conjunction with the Search for Effective Schools Project, and included researchers familiar with classroom and school studies, as well as staff from Lansing, Milwaukee, and New York City public schools. Another meeting, held in conjunction with Far West Lab's Successful Schooling project, also included researchers, an NEA representative, as well as teachers and principals from San Francisco, Reno, and from Ogden, Utah. Finally, a working session organized around FWL's Interactive Research and Development in Teaching project served as an initial planning meeting for our collaborative research program. Included in this meeting were researchers, teacher educators, a representative of the Chicago Public Schools (recently named as superintendent there) and representatives of the NIE and AFT.

Two other meetings have informed our research agenda. A mid-project progress meeting of recipients of grants from the FY'78 Teaching as a Linguistic Process research program formed the basis of reviewing progress made to date, as well as identifying additional areas of work. In the Spring of 1978, a meeting involving researchers and educators concerned with writing instruction was convened. The recommendations from this session form the principal basis for our current and proposed efforts in research on writing instruction.

Future Planning

Future planning activities will largely focus on the planning of specific activities. During the remainder of FY'80, we will involve a group of researchers, teacher educators, and teacher, principals, and district level staff in planning our collaborative research program.

During FY'81, we intend to conduct several targeted planning activities, organized around separate projects we have proposed. These include planning for the instructional leadership RFP, for the RFP's on secondary reading and math instruction, and for the effective schools project.

We know of several planned conferences and meetings, to be held in the coming year, around the issue of Effective Schools. In addition to the conference being planned by NIE, additional conferences or meetings are in various stages of planning by Harvard University, Teachers College, the Carnegie Foundation, and Educational Testing Service. Program staff have been invited to each of these meetings, and will attend as many as possible. Attendance at these meetings will contribute to the identification of additional problems and to the formulation of research issues.

VII. Staffing

The staff of the Research on Instruction Team include Michael Cohen (Team Leader) Joe Dominic, Martin Engel, Ed Fuentes, Sam Pisaro, Kent Viehoever, and Diana Thompson.

VIII. Reporting

During FY'81 we will explore the possibility of synthesizing and reporting on current knowledge regarding effective instructional practices in elementary level reading and mathematics instruction. Such a report will discuss the direct instruction model, its applications and limitations, alternative approaches to its use and implementation. Such an exploration will involve program staff, researchers, and principals and teachers. We anticipate that such as effort will result in a monograph, directed primarily to teachers, which will describe effective instructional and management strategies. We hope that such a report could be issued in late FY'81 or FY'82.

Following this, we will consider, in a similar fashion, the wisdom of issuing a monograph on effective school level practices. Our knowledge base is considerably weaker here, and we will proceed cautiously to consider whether we can appropriately provide research-based guidance to the field regarding effective school level practices. While we hope to issue reports from specific projects or lines of inquiry (e.g., a report on methodologies for identifying effective schools, a report on what we will have learned on effective writing instruction practices) during the next several years, we do not anticipate making a major summative report from the entire research area until FY'84.

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